

**PATENT APPLICATION
Q43872**

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

In re Reissue application of:

Hayao WATANABE, et al.

Appln. No. 08/773,180

Group Art Unit: 2102

Confirmation No.: (TBA)

Examiner: C. LABALLE

Filed: December 27, 1996

U.S. Patent No. 5,914,548

For: SEALED ACTUATOR

Issued: June 22, 1999

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination of this reissue application on the merits, please enter the following amendments:

IN THE CLAIMS:

Please add the following new claims:

--25. A sealed actuator comprising:

a motor stator including a stator magnetic pole excited by a rotation-drive coil;

a housing to which said motor is attached;

a motor rotor including a rotor magnetic pole disposed opposite to a surface of said stator magnetic pole through a gap;

bearings for rotatably supporting a rotation shaft of said motor rotor to said housing;

an encoder for measuring displacement of said motor rotor; and

a hermetically sealing partition wall made of a nonmagnetic metal material and disposed at the gap between said stator magnetic pole and said rotor magnetic pole, a space where said motor rotor is disposed being hermetically isolated from a space wherein said motor stator is disposed;

wherein said bearings are a plurality of rolling bearings, said rolling bearings supporting said motor rotor at positions on said housing at both sides of a member constituting said sealing partition wall in a longitudinal direction of said motor rotor so that said housing directly receives a load applied to said bearings.

26. A sealed actuator a claimed in claim 25, wherein said encoder is an optical encoder.

27. A sealed actuator as claimed in claim 25, wherein said encoder is a magnetic encoder.

28. A sealed actuator comprising:

a motor stator including a stator magnetic pole excited by a rotation-drive coil;

a housing to which said motor stator is attached;
a motor rotor including a rotor magnetic pole disposed opposite to a
surface of said stator magnetic pole through a gap;
bearings for rotatably supporting a rotation shaft of said motor rotor to
said housing;
an encoder for measuring displacement of said motor rotor; and
a hermetically sealing partition wall made of a nonmagnetic metal
material and disposed at the gap between said stator magnetic pole and said
rotor magnetic pole, a space where said motor rotor is disposed being
hermetically isolated from a space wherein said motor stator is disposed.

29. A sealed actuator as claimed in claim 28, wherein said encoder is an
optical encoder.

30. A sealed actuator as claimed in claim 28, wherein said encoder is a
magnetic encoder.

31. A sealed actuator comprising:
a motor stator including a stator magnetic pole excited by a rotation-
drive coil;
a housing to which said motor stator is attached;
a motor rotor including a rotor magnetic pole disposed opposite to a
surface of said stator magnetic pole through a gap;

bearings for rotatably supporting a rotation shaft of said motor rotor to said housing;

an encoder for measuring displacement of said motor rotor; and

a hermetically sealing partition wall made of a nonmagnetic metal material and disposed at the gap between said stator magnetic pole and said rotor magnetic pole, a space where said motor rotor is disposed being hermetically isolated from a space where said motor stator is disposed;

wherein said sealed actuator further comprises reinforcing means for reinforcing at least a part of said hermetically sealing partition wall, said reinforcing means being made of substantially the same nonmagnetic metal material as said partition wall.

32. A sealed actuator as claimed in claim 31, wherein said encoder is an optical encoder.

33. A sealed actuator as claimed in claim 31, wherein said encoder is a magnetic encoder.

34. A sealed actuator comprising a plurality of unit sealed actuators connected in series to each other, each of said unit sealed actuators comprising:

a motor stator including a stator magnetic pole excited by a rotation-drive coil;

a housing to which said motor stator is attached;

a motor rotor including a rotor magnetic pole disposed opposite to a surface of said stator magnetic pole through a gap;

bearings for rotatably supporting a rotation shaft of said motor rotor to said housing;

an encoder for measuring displacement of said motor rotor; and

a hermetically sealing partition wall made of a nonmagnetic metal material and disposed at the gap between said stator magnetic pole and said rotor magnetic pole, a space where said motor rotor is disposed being hermetically isolated from a space where said motor stator is disposed;

wherein said bearings are a plurality of rolling bearings, said rolling bearings supporting said motor rotor at positions on said housing at both sides of a member constituting said sealing partition wall in a longitudinal direction of said motor rotor so that said housing directly receives a load applied to said bearings; and

wherein said rotor magnetic pole includes a salient pole tooth of a steel material of a magnetic substance subjected to salient pole working.

35. A sealed actuator as claimed in claim 34, wherein said encoder is an optical encoder.

36. A sealed actuator as claimed in claim 34, wherein said encoder is a magnetic encoder.

37. A sealed actuator comprising a plurality of unit sealed actuators connected in series to each other, each of said unit sealed actuators comprising:

 a motor stator including a stator magnetic pole excited by a rotation-drive coil;

 a housing to which said motor stator is attached;

 a motor rotor including a rotor magnetic pole disposed opposite to a surface of said stator magnetic pole through a gap;

 bearings for rotatably supporting a rotation shaft of said motor rotor to said housing;

 an encoder for measuring displacement of said motor rotor; and

 a hermetically sealing partition wall made of a nonmagnetic metal material and disposed at the gap between said stator magnetic pole and said rotor magnetic pole, a space where said motor rotor is disposed being hermetically isolated from a space where said motor stator is disposed;

 wherein said bearings are a plurality of rolling bearings, said rolling bearings supporting said motor rotor at positions on said housing at both sides of a member constituting said sealing partition wall in a longitudinal direction of said motor rotor so that said housing directly receives a load applied to said bearings.

38. A sealed actuator as claimed in claim 37, wherein said encoder is an optical encoder.

39. A sealed actuator as claimed in claim 37, wherein said encoder is a magnetic encoder.

40. A sealed actuator comprising a plurality of unit sealed actuators connected in series to each other, each of said unit sealed actuators comprising:
a motor stator including a stator magnetic pole excited by a rotation-drive coil;

a housing to which said motor stator is attached;
a motor rotor including a rotor magnetic pole disposed opposite to a surface of said stator magnetic pole through a gap;
bearings for rotatably supporting a rotation shaft of said motor rotor to said housing;
an encoder for measuring displacement of said motor rotor; and
a hermetically sealing partition wall made of a nonmagnetic metal material and disposed at the gap between said stator magnetic pole and said rotor magnetic pole, a space where said motor rotor is disposed being hermetically isolated from a space where said motor stator is disposed.

41. A sealed actuator as claimed in claim 40, wherein said encoder is an optical encoder.

42. A sealed actuator as claimed in claim 40, wherein said encoder is a magnetic encoder--

REMARKS

Claims 1-42 are pending. Claims 1-24 are as they appear in U.S. Patent No. 5,914,548. Claims 25-42 have been added to further define the invention.

Claims 25-42 set forth a sealed actuator having an encoder for measuring displacement of a motor rotor. Claims 26, 29, 32, 35, 38 and 41 specifically set forth an optical encoder, whereas claims 27, 30, 33, 36, 39 and 42 specifically set forth a magnetic encoder. Support for the new claims can be found in the specification at least at column 14, lines 41-63.

A Reissue Declaration, Consent of Assignee, Rule 3.73(b) Statement and the original Letters Patent will be submitted in due course.

If the Examiner has any questions or wishes to discuss this reissue application, he is respectfully requested to contact the undersigned attorney at the local exchange listed below.

Please charge any fees necessary to maintain the pendency of this reissue application to our Deposit Account No. 19-4480.

Respectfully submitted,



Steven M. Gruskin
Registration No. 36,818

SUGHRUE, MION, ZINN,
MACPEAK & SEAS, PLLC
2100 Pennsylvania Avenue, N.W.
Washington, D.C. 20037-3213
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

Date: June 22, 2001

• PRELIMINARY AMENDMENT
U.S. PATENT NO. 5,914,548

Q43872
REISSUE

A P P E N D I X

MARKED UP VERSION SHOWING CHANGES MADE

IN THE CLAIMS:

New claims 25-42 are added.